

WHAT IS CLAIMED IS:

1. A magnetic recording medium comprising:
 - a substrate;
 - an underlayer formed on the substrate;
 - 5 a magnetic layer formed on the underlayer, wherein the magnetic layer comprising crystal grains having
 - (a) an Ll₀ structure mainly including Fe and Pt, and
 - (b) 0.1 to 50 atomic percent of at least one element selected from the group consisting of Cu, Au, 10 Zn, Sn, Pd and Mn; and
 - a protective layer formed on the magnetic layer.
2. The medium according to claim 1, wherein the substrate is a glass substrate.
- 15 3. The medium according to claim 1, wherein the crystal grain has a composition represented by the following formula:
$$(Fe_{1-x}Pt_x)_{100-y}M_y$$
where x ranges from 0.4 to 0.6, y ranges from 0.1 20 to 50, M is at least one element selected from the group consisting of Cu, Au, Zn, Sn, Pd and Mn.
4. The medium according to claim 3, wherein x ranges from 0.4 to 0.56, y ranges from 3 to 20.
- 25 5. The medium according to claim 1, wherein the magnetic layer has a thickness of 50 nm or less.
6. A magnetic recording medium comprising:
 - a substrate;

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- an underlayer formed on the substrate;
- a magnetic layer formed on the underlayer, wherein the magnetic layer comprising crystal grains having
- (a) an L₁0 structure mainly including Fe and Pd,
- 5 and
- (b) 0.1 to 50 atomic percent of at least one element selected from the group consisting of Cu, Au, Zn, Sn and Mn; and
- a protective layer formed on the magnetic layer.
- 10 7. The medium according to claim 6, wherein the substrate is a glass substrate.
8. The medium according to claim 6, wherein the crystal grain has a composition represented by the following formula:
- 15 $(Fe_{1-x}Pd_x)_{100-y}M_y$
- where x ranges from 0.4 to 0.6, y ranges from 0.1 to 50, M is at least one element selected from the group consisting of Cu, Au, Zn, Sn and Mn.
9. The medium according to claim 8, wherein x ranges from 0.4 to 0.56, y ranges from 3 to 20.
- 20 10. The medium according to claim 6, wherein the magnetic layer has a thickness of 50 nm or less.
11. A magnetic recording medium comprising:
- a substrate;
- 25 an underlayer formed on the substrate;
- a magnetic layer formed on the underlayer, wherein the magnetic layer comprising crystal grains having

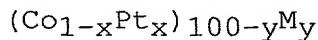
(a) an L₁0 structure mainly including Co and Pt,
and

(b) 0.1 to 50 atomic percent of at least one
element selected from the group consisting of Ni, Au
5 and Mn; and

a protective layer formed on the magnetic layer.

12. The medium according to claim 11, wherein the
substrate is a glass substrate.

13. The medium according to claim 11, wherein the
10 crystal grain has a composition represented by the
following formula:



where x ranges from 0.4 to 0.6, y ranges from 0.1
to 50, M is at least one element selected from the
15 group consisting of Ni, Au and Mn.

14. The medium according to claim 13, wherein x
ranges from 0.4 to 0.56, y ranges from 3 to 20.

15. The medium according to claim 11, wherein the
magnetic layer has a thickness of 50 nm or less.